

STUDYING OCEAN DEPTHS

Investigations in the Pacific by the
 United States Navy

Albatross Expedition.

Prof. Almassiz Reports Progress in Deep-Sea Researches—Nodules in Hauls From the Bottom—Little Animal Life Below 300 Fathoms—Interesting Fauna Near the Surface

Prof. A. Agassiz, who is making deep-sea investigations in the Pacific Ocean via the United States Fish Commission ship Albatross, has submitted to that department a report of his work up to September 30, 1909, forwarded from Tahiti Island. This work is being done as an aid to the profitable study of useful sea fishes, which, it was stated at the Fish Commission, could not be prosecuted without a knowledge of their food, the food of their food, their respective friends and foes, the habitat of the several species and their means of propagation.

from one region to another in the embryonic as well as the adult stage. The temperatures, currents, and specific gravity of the waters must be studied, it was agreed, in connection with the migratory habits of pelagic forms, hence investigation must be extended seaward wherever life exists, until a complete history of both the commercial and contributory species is obtained.

The Albatross which is being used for the expedition into the Pacific is in command of Capt. Jefferson F. Moser, United States Navy.

Prof. Agassiz says in his extensive technical report that Captains Moser and Peck decided not to make any soundings nor do any deep-sea work until they had passed beyond the life of soundings already run by the Albatross and Thetis between California and the Hawaiian Islands. The former has been in the Pacific for several months, the latter for a few days.

made on first sounding in 1,200 fathoms about 420 miles from Point Concepcion, the nearest land. They occupied various stations, until they reached the outer edge of the plateau, from which they to Marquette Island, having run a distance of 2,300 miles in a straight line. At Station No. 2 the depth had increased to 2,500 fathoms, the nearest land, Goodhope Island, being about 450 miles, and Point Concepcion nearly 500 miles distant. The depth gradually increased to 2,700 fathoms, and finally to 2,858 fathoms, the deepest sounding obtained thus far in the Mexican portion of the Pacific through which the Albatross was passing. From the

point the depths varied from 2,888 to 6,276 fathoms (2,888 to 2,302 meters). The maximum depth was 6,276 fathoms. The depth became 2,257 fathoms. It is the deepest to 1,920, and diminished to 1,840 fathoms. The point twenty miles from Nunobiki Island.

Between Nukuhona and Hono-Hunua (Ka-Haka) lies a depth of 300 fathoms was found, and five miles to the north was a depth of 1,000 fathoms. The boundary seems to show that this part of the Marquesas rises from a plateau having a depth of 3,000 fathoms and being about fifty miles wide.

Nine stations were occupied between the Marquesas and the northeastern extremity of the Phoenix; the greatest depth obtained being 2,537 fathoms. In the western part of the Phoenix the bottom of the basin developed between latitude 24 degrees 20 minutes north and latitude 6 degrees 20 minutes south, varying in depth from 1,000 to 1,500 fathoms. Prof. Agassiz suggests should be named Moore Basin.

The character of the bottom in the western Albatross was also indicated by the size of the debris recovered. The debris was composed of red clay, sand and manganese nodules, with sharp shells and cuticular carapaces. At nearly all the stations were indications of manganese nodules, either small (less than 1 inch in diameter) or either slabs from 5 to 15 inches in length and 4 to 6 inches in thickness, or small ones ranging from the size of a walnut to a lentil, less. Some of the nodules were 1 to 2 inches in diameter, the slabs varying from 1 to 2 by 5 inches in diameter, the largest being 6-1-2 inches. Other manganese nodules were brought up from the bottom until the Albatross was in sight of Tahiti.

The Albatross expedition made a few hauls with the trawl on its way, but owing to the great distance from Tahiti, the hauls were made in the open sea. The Albatross

3,500 miles, there was not a great deal of time to experiment in intermediate depths. The investigation confirmed previous researches and indicated that at great depths at considerable distances from land and away from any great oceanic current, there is comparatively little animal life to be found. Where manure and nodules were brought up the hauls were especially poor, a few deep-sea holothurians and caprellans, and some small actinians, which had attached themselves to the nodules with a few other invertebrates, seemed to be all that lived at these great depths from 2,500 to 3,500 fathoms—and far away, say 700 to 1,000 miles from the nearest land.

The bottom temperature of the deep, on Moser Basin, varies between 2.6-6 degrees C at 2,023 and 2,749 fathoms to 52.2-63.2 degrees C at 1,410 fathoms. The temperature of the water at 1,410 fathoms is 12.1-13.1 degrees C. From the Marquise Bank, at 1,362 fathoms, the temperature was 55.5 degrees C. (owing to the failure of the deep-sea thermometer) surface-to-surface serial temperature observations could not be made. The deep-sea temperature was 52.2 degrees C. The pelagic work of the Albatross was limited to surface hauls, one in the morning and another in the evening. The collection of surface animals proved to be quite successful. The following interesting forms were obtained. The deeper hauls yielded Prof. Agassiz's former investigations that beyond 300 to 550 fathoms very little animal life is found, and in the belt above 550 fathoms, but very interesting forms of animal deep-sea crustaceans and deep-sea fishes were obtained.

THE GRAZE FOR STATISTICS.

Human Life Subjected to the Closest Analysis.

From Father's Weekly.

Statistics, I think, will not let us get alone. Everywhere we do or say is submitted to the closest analysis; and the figures emerge fast and sure. The following is a tabulation of our journey comes from the workshop of M. Alfred Acan, who is miscellaneous itself. He has taken the most accurate and indisputable of the number of words the normal man utters in the course of a year:

Ignorant, casual, playing the part of the simple, uneducated, of two hundred words; or of the university professor a thousand of many thousands; it appears that we let out nearly a million big words and thousands of words between January and December.

Every year we shake hands about one hundred times, and utter about one hundred words. The reason is a force sufficient to raise a locomotive weighing eighty tons. The raising of our eyelids is accomplished about twenty-four million big words and thousands of times per year, and represents the consumption of energy capable of lifting a weight of fifty tons.

Turning to the division of our time, it is found that a normal man living here

years are spent no less than twenty-two years nine months and fifteen days asleep and eleven years and eight months awake. This operation has been repeated exactly the same length of time as his work.

He has passed eleven years and ten months in moving about and the same space of time in the operation of feeding. His toilet has occupied two years and eleven months. Two years and eleven months, also, pass in doing nothing or in little things that are not easily classed.

The surprise is the estimate that a man passes exactly the same time when asleep as in speaking—ten years, five months and a half. It is a very new idea of time, but one that ought to be attached to every man's attention.

MEASURING OCEAN DEPTHS

Investigations in the Pacific by the
Albatross Expedition.

...i. Agassiz, who is making deep-sea investigations in the Pacific Ocean on the United States Fish Commission ship Albatross, has submitted to that department of his work up to September 1904, forwarded from Tahiti Island. This includes some 400 new species of deep-sea fish, many of them of useful sea fishes, which, if

at the Fish Commission, could be prosecuted without a knowledge of it, the food of their food, their reproductive habits and feces, the habitat of all species and their means of passage from one region to another in the embryo as well as the adult stage. The tides, currents, and specific gravity factors must be studied, it was said.

Agassiz says in his extended report that Captain Meier and he did not make any soundings nor did they do any sea work until they had passed the line of soundings already run by Captain and Thetis between Oahu and the Hawaiian Islands. They then

For first sounding in 1,300 fathoms, 10 miles from Point Conception, the land. They occupied twenty-six until they reached the northern plateau, from which the two islands, having run a distance miles in a straight line. At 5:30 the depth had increased to 2,300—the nearest land, Guadalupe being about 450 miles, and Point on nearly 500 miles distant. The

gradually increased to 2,490 fathoms, the deepest obtained thus far in the west-part of the Pacific through which arrows was passing. From that depth varied from 2,600 to 2,750 fathoms, and gradually passing thence, until off the Marquesas became 2,200 fathoms. It then became 1,900, and diminished to 1,600 at a point twenty miles from Nukunono.

from Nukachina and Hoso-Honna Island a depth of 826 fathoms and, five miles to the south of a 467 fathoms. The soundings show that this part of the Marianas from a plateau having a depth of 800 fathoms and being about fifty miles long. The islands and reefs of the Marianas were occupied between the 15th and the northwestern extremity of the island.

canthus, the greatest depth being 2,837 fathoms. In all seven soundings were made. The deep developed between latitude 24° 6 minutes north and latitude 6° 4 minutes south, varying in depth to a little less than 2,500 fathoms. Agassiz suggests should be Lower Basin.

Trawl showed bags of red clay canoes, modules, with sharp, teen-teen ear-bases. At nearly all the were indications of mangrove pebble moulds in the first haul were, from 5 to 13 inches in length, 6 inches in thickness, or small, being from the size of a walnut or less. Some of them looked like/flat canoe-hulls, varying from 2 to 6 inches in diameter, the

Fig. 6-1-2 fishes. Other magnifices were brought up from the ocean at the equator and they were found. Aibratross was in sight of Tahiti. Ibratross expedition made a few the travel on its way, but over great distance to be covered between Francisco and the Mariposa. es, there was not a great deal of experiment in intermediate depths. estigation confirmed previous re-

ment indicated that at great depths, tolerable distances from land and in any great oceanic current, there is relatively little animal life to be found. Where manganese nodules were up the hauls were specially poor, species holothurians and ophiurans, small actiniae which had attached themselves to the nodules with a few centurides, seemed to be all that these great depths from 2,500 to 3,000 and far deeper, saw. Two to

tion temperature of the deep, or, as it varies between 24.6 degrees and 2.79 fathoms to 35.1 degrees at 10 m, and 35 degrees at 2.6 fathoms (12) miles from the Marquesas, fathoms. The temperature was, being to the failure of the thermomètres satisfactory serial-observations could not be being without deep-sea data, the

work of the Albatross was limited to males, one in the morning and in the evening. The collection of animals proved to be quite an expensive and more interesting form of work. The deeper hauls yielded, according to the former investigations, and 280 to 350 fathoms very little is found, and in the belt above the greater number of many deep-sea crustaceans and deep-

CRAZE FOR STATISTICS.
Life Subjected to the Closest Analysis.
(From Collier's Weekly.)
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everything we do or say is sub-
the closest analysis; and the fig-
ure full of warning and reproach.

rest tabulation of our ideas in the workshop of M. Alfred A. is minuscule itself. He has out, first, an approximate calculation of the number of words the animal uses in the course of a year. Next, of cultured, playing on the vocabulary of two hundred words, a university professor's thesaurus thousands. It appears that we let a million eight hundred thousand

year we shake hands about one two hundred times, expending on every force sufficient to raise a weight of eighty tons. The force available is accomplished about six million six hundred thousand times a year, and represents the cost of energy capable of lifting a weight of fifty-one pounds.

He spent no less than twenty-four months and fifteen days asleep on years and eight months at his recreation has occupied extensive length of time as his work. He passed eleven years and ten in moving about and the same time in the operation of feeding. It has occupied two years and months. Two years and eleven months have in doing nothing or in

prise is the estimate that a man takes the same time in thinking about one year, five months and which given one a new idea of that ought to be attached to his utterances.

